GENERAL SPECIFICATIONS

			TX6n		TX5n		TX4n	
Output Power (W)			**120V(US)**	**230V(EU) *1**	**120V(US)**	**230V(EU) *1**	**120V(US)**	**230V(EU) *1**
		2Ωper channel	2750	2750	2500	2500	2200	2200
		4Ωper channel	3000	3000	2200	2300	1900	2000
		8Ωper channel	1800	1800	1300	1300	1100	1100
	1kHz	4Ωbridge	5500	5500	5000	5000	4400	4400
	THD+N=1%	8Ωbridge	6000	6000	4400	4600	3800	4000
	1kHz	2Ωper channel	4100	4120	3480	3600	2990	3050
	20mS burst	4Ωbridge	8200	8240	6960	7200	5980	6100
	Constant voltage line	STEREO mode:	-		100V line, 1250W / 8Ω		-	
		BRIDGE mode:	-		200V line, 2500W / 16Ω		-	
SN ratio	20Hz-20kHz	(DIN AUDIO)	108dB		107dB		106dB	
Power consumption (W)	Stand-by		20W					
	Idle		100W					
	1/8*2 (2 Ω / Pink noise)		1800W		1600W		1500W	

1/8 = Power consumption at 1/8 maximum output power

All Models			
THD+N	20Hz-20kHz, Half Power RL=4 Ω , 8 Ω		0.2%
Intermodulation Distortion	60Hz: 7kHz, 4:1, Half Power *2		0.25%
Frequency response		MAX	+0.5dB
RL=8 Ω, Po=1W		TYP	0dB
10Hz-20kHz		MIN	-0.5dB
Channel Separation	Half Power RL=8 Ω ,1kHz Att. max input 600 Ω shunt		65dB
Damping Factor	RL=8 Ω 1kHz		800
Voltage Gain			43.8dB ~ 19.8dB, 0.1dB step
Maximum Input Voltage			+24dBu*4
Input Impedance			20kΩ (balanced) 10kΩ (unbalanced)
Controls	Front Panel		POWER switch (push on / push off), Rotary encoder x 2, Function button x 4, HOME button x 1, EXIT button x 1, ENTER button x 1, Mute button x 2
Connectors	Analog input	In	XLR-3-31 type x 2
		Thru	XLR-3-32 type x 2
	AES/EBU input/output	In	XLR-3-31 type x 1 (2 channels, 24-bit 96kHz ~ 44.1kHz)
		Thru	XLR-3-32 type x 1 (2 channels)
		Out	XLR-3-32 type x 1 (2 channels, 24-bit 96kHz ~ 44.1kHz)
	Speaker output		Neutrik® SPEAKON® NL4 x 2, 5-way binding post x 2 pairs
	Ethernet		RJ45 x 1
	Fault output		Euroblock connector (3P) x 1
Indicators			IDENTIFY, NETWORK, PROTECTION, BRIDGE, PARALLEL, POWER, STANDBY, MUTE, ALERT, CLIP, SIGNAL,
Load protection			POWER switch on / off mute, DC-fault: Amplifier shuts down automatically. clip limiting: THD ≥ 0.5%
Amplifier protection			Thermal: Mute the output (heatsink temp 90°C) (return automatically.). VI limiter (RL ≤ 1Ω) : Limit the output
Power supply protection			Thermal: Amplifier shuts down automatically. (heatsink temp≥ 100°C)
Cooling			Variable speed fan: x 2
Power requirements			US : 120V (60Hz) 30A Twist lock connector EU : 220V ~ 230V (50Hz / 60Hz)
Dimensions(W×H×D)			480 x 88 x 461mm (18.9" x 3.46" x 18.1" : 2U)
Weight			16.0kg (35 lbs)
Accessory			Handle x 2 (with flat-head screw x 4), Euroblock connector (3P) x 1, Owner's Manual

(*1) Output power depends on the power supply voltage. These figures are based on 230V.
If the power supply voltage is 220V, output power can be 8% less than the power shown in the spreadsheet.
Output power can be 7% more in case of 240V.
(*2) 1/8 power = 9dB below rated power
(*3) Half power = 3dB below rated power
(*4) 0dBu = 0.775Vrms

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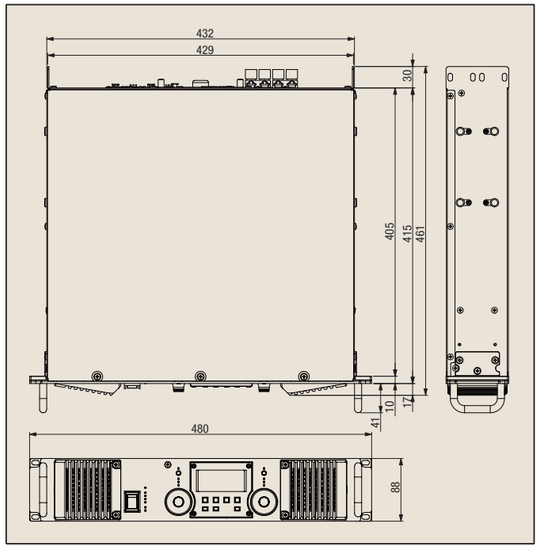
Dimensions

unit : mm



YAMAHA
YAMAHA CORPORATION
P.O.BOX 1, Hamamatsu Japan
http://www.yamahaproaudio.com

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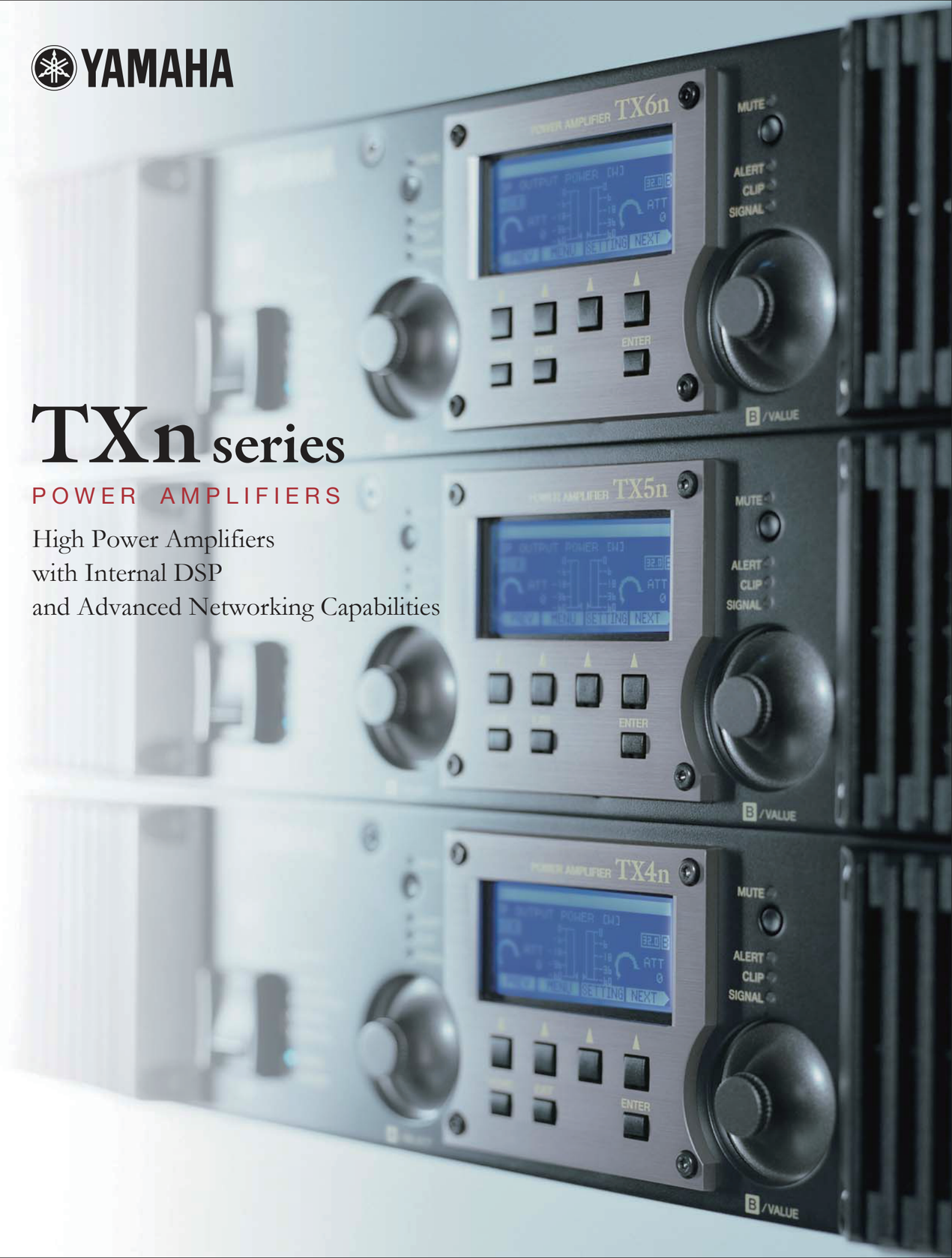
YAMAHA

TXn series

POWER AMPLIFIERS

High Power Amplifiers
with Internal DSP
and Advanced Networking Capabilities



TX6n — 3000 Watts per Channel into 4 ohms
TX5n — 2500 Watts per Channel into 2 Ohms
TX4n — 2200 Watts per Channel into 2 Ohms

- High power for touring applications plus stable 2-ohm drive capability for line array speaker systems.
- Yamaha DSP technology provides extensive monitoring, control, input/speaker processing, and protection functions built in.
- Card slot makes it easy to match the amplifier's I/O configuration to the system — analog or digital.
- Failsafe redundant input configuration using both the analog XLR and the card slot inputs.
- Legendary Yamaha quality control for consistently superior sonic quality and reliability.

Solid Power and Stunning Audio Quality with Built In Processing

There was a time – not so long ago – when all a professional power amplifier had to do was amplify. But with increasing system demands and requirements for reproduction quality, the need for additional support equipment increased dramatically, leading to configurations of mind-boggling complexity. Racks of mixers, equalizers, crossovers, limiters, delays, and more became necessary just to handle output processing.

Yamaha TXn series power amplifiers combine outstanding audio power performance with industry-leading Yamaha digital signal processing technology to give you total output capability in astonishingly compact 2U-size amplifiers. But there's more. You also get unmatched flexibility to choose the input/output configuration and format that best suits your needs, while comprehensive networking capability lets you monitor and control complex multi-amp systems from a laptop computer. With the appropriate I/O cards these advanced amplifiers are also fully compatible with CobraNet or EtherSound audio networks. And if you're driving line array speaker systems you'll appreciate the fact that every one of these amplifiers can comfortably drive 2-ohm loads with total stability and reliability.

These revolutionary power amplifiers not only deliver high power and staggering sonic quality, but they also feature all monitoring, control, processing, and protection functions you need to achieve optimum performance in systems of any size or complexity built right in. The power amp of the future does much more that just amplify. The power amp of the future is here.

Rear panel (TX6n)

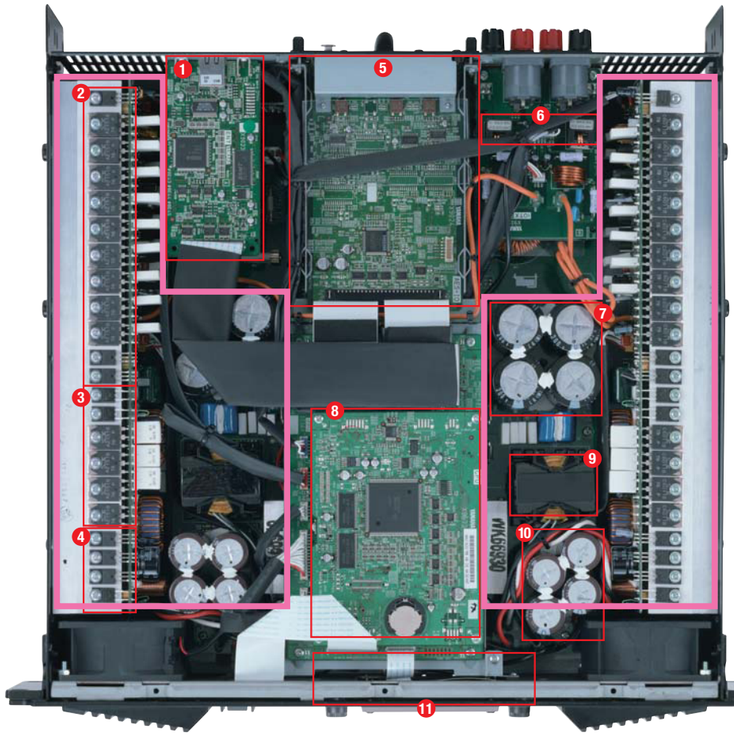
Superlative Power Performance Combined with Cutting-edge DSP and Unrivalled Flexibility

Always maintaining headroom - Stable operation at 2 ohms

When speakers are connected in parallel, often the case with subwoofers or line arrays, stability at lower impedance becomes extremely important. The actual impedance curve of a speaker unit is complex and its load varies greatly depending on frequency. The actual impedance of a speaker is often lower than its nominal impedance under certain frequencies, putting excessive stress on the amplifier especially if multiple speakers are connected in parallel. The TXn series are designed to perform with ease even under demanding low impedance conditions, always maintaining top quality performance. Some of the many refinements implemented to provide stable low-impedance drive capability include newly developed thin-film power transistors and flat-wire power transformer windings to minimize heat loss. Many other details contribute, but the final result is totally stable drive capability down to two ohms.

Dual-mono Configuration with Independent Power Supplies

The TXn amplifiers feature a dual mono configuration: the mono amplifiers are arranged symmetrically on each side of the chassis, each with its own independent power supply. This configuration effectively eliminates performance-degrading interference between channels while maintaining optimum separation and superior definition under all operating conditions and with all types of source material. Sudden high power demands in one channel will not affect the performance of the other, for example. The two power supplies operate in opposing phases to cancel noise while minimizing electromagnetic interference.



TX6n internal layout

1. Ethernet device
2. Class AB power amplifier
3. EEEngine high speed voltage buffer
4. EEEngine high speed current buffer
5. MY card slot
6. Precision current sensor(load monitor)
7. 200V primary capacitor
8. DSP7+SharcDSP
9. Transformer
10. 250V secondary capacitor
11. LCD 0.5dB step attenuator

: Mono Amp x 2 = Dual Mono Amp structure

EEEngine Efficiency

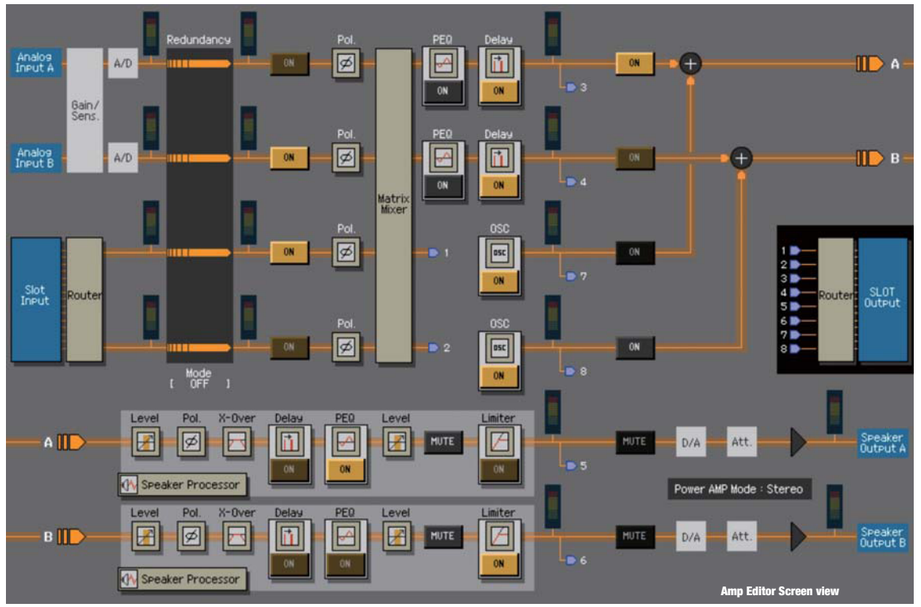
Original Yamaha EEEngine technology reduces power consumption by approximately 50% compared to conventional amplifiers while maintaining full Class AB reproduction quality and fast response. Power mains quality and capacity become significant issues in large-scale live sound systems, but the ability of the TXn series amplifiers to deliver high power output with dramatically reduced power consumption goes a long way towards alleviating the problem. In addition to less susceptibility to imperfect mains supplies, lower power consumption also achieves reduced heat generation, significantly increasing part life and reliability. In order to achieve stable 2-ohm drive capability the EEEngine circuitry in the TXn series amplifiers features a newly developed high-efficiency FET current buffer drive circuit. Only Yamaha can deliver this level of high efficiency and stability with low-impedance loads.

Versatile Onboard DSP

On top of the outstanding basic performance offered by the TXn series power amps, they are equipped with some of the most advanced and flexible DSP (Digital Signal Processing) capabilities available. Yamaha is an acknowledged leader in the field of digital signal processing, and the full weight of that technology has been brought to bear in these cutting-edge power amplifiers. All three TXn models incorporate advanced 24 -bit 96-kHz DSP capability that employs Yamaha's own DSP7 LSI (the same LSI that provides the processing power for Yamaha's industry-standard digital mixing consoles) as well as powerful SHARC processing technology. In addition to outstanding sound quality and low latency, an extraordinary selection of control and processing capabilities are provided, ranging from basic amplifier settings through input and speaker processing to comprehensive status monitoring. The built-in input and speaker processing capabilities are so extensive and powerful, in fact, that external processors will be unnecessary in many applications. The onboard DSP parameters and functions can be accessed directly through the LCD and button interface provided on the front panel of the amplifier, or via Yamaha's Amp Editor software running on a computer connected via Ethernet. Amp Editor control provides additional advantages and capabilities for controlling large systems that employ numerous amplifiers (Amp Editor is discussed in more detail on the following page).

DSP Features and Functions

The chart below lists most of the monitoring, control, and processing functions provided by the TXn series amplifiers. Unless otherwise noted these functions can be accessed directly via the amplifier's own display and controls. The Amp Editor software described on the following page offers more comprehensive displays and easier control, as well as centralized management of entire multi-amplifier systems.



Amp Editor Screen view

Amplifier Control & Settings

Input Attenuator (0.5 dB steps)

Gain/Sensitivity (0.1 dB steps)

Input Type:
- Card Slot (AES/EBU, EtherSound*, CobraNet*, Analog*)

* Optional MY card required.

Signal redundancy:
- Card slot with analog backup
- Card slot with analog override

Amplifier Mode: • Stereo •Bridge • Parallel

Input Mixer

Attenuator Link and Limits

Selectable Metering

Input Routing and Processing

Input Card Routing

Mute

Polarity

Level

4-in/4-out Matrix Mixer

Polarity

EQ (8 Bands per Input Channel) :
- 6-band Parametric EQ
- 2-band Selectable EQ (PEQ, Low/High Shelving, LPF/HPF)

Delay:
Up to 1300 milliseconds in 0.01 millisecond increments(1 sample, 0.1 meter, or 0.1 feet steps selectable via Amp Editor).

Oscillator: • Pink Noise • Burst Noise • Variable Frequency Sine Wave

Polarity

4-in/2-out Matrix Mixer

Speaker Processing

Level, Mute

Polarity

Crossover (LPF/HPF):
- 6 dB/Oct • Adjustable Fc Gain* • Bessel* • Butterworth* • Linkwitz-Riley

Delay:
Up to 500 milliseconds in 0.01 millisecond increments (1 sample, 0.1 meter, or 0.1 feet steps selectable via Amp Editor).

EQ (6 Bands per Output Channel):
- PEQ • Low/High Shelving (6 or 12 dB/Oct)
- All Pass (for phase matching) • Horn EQ

Limiter

Speaker Library:
- Yamaha speaker libraries pre-installed
- Other libraries can be loaded as required
- Edit security provided

* 12, 18, 24, 36, or 48 dB/Oct

DSP/CPU-based Protection

Switchable Clip Limiter

Voltage Limiter

Power Limiter

Overheat Limiter

Low Impedance/Short Circuit Mute (1-sec. reset)

Output DC Mute

VHF Limiter

Current Limiter

Security

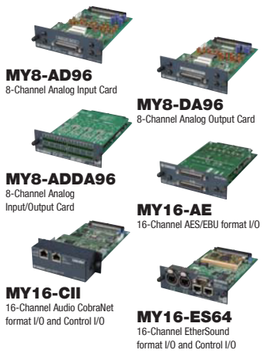
Password Lockout of Display and Mute Button

Flexible Input Configuration

In addition to balanced analog inputs and throughputs that are permanently installed on the rear panel, the TXn series amplifiers feature a Yamaha mini-YGDAI standard card slot that comes supplied with an AES/EBU I/O card for digital input and throughput. The analog and digital inputs can be used independently, or signals can be applied to both and mixed or switched automatically for emergency announcements, for example. The original AES/EBU I/O card can be replaced with compatible Yamaha mini-YGDAI cards that provide other digital or analog input/output formats, or with network cards that allow full compatibility with CobraNet or EtherSound audio networks.

Yamaha Mini-YGDAI cards

MY card	format	I/O	Connector	Note / Application
MY4-AD	Analog	4in	XLR	Analog redundancy
MY8-AD24		8in	TRS Phone	
MY8-AD96		8in	D-sub 25pin	
MY4-DA		4out	XLR	Processor output to
MY8-DA96		8out	D-sub 25pin	other analog amplifier
MY8-ADDA96		8in 8out	Euro block	Redundancy, processor output
MY8-AE	AES/EBU	8in 8out	D-sub 25pin	
MY8-AE96		8in 8out	D-sub 25pin	
MY8-AE96S		8in 8out	D-sub 25pin	
MY8-AEB		8in 8out	BNC	Video
MY16-AE		16in 16out	D-sub 25pin	
MY16-CII	CobraNet	16in 16out	RJ45	
MY16-ES64	EtherSound	16in 16out	RJ45	
MY16-EX	YAMAHA proprietary	16in 16out	RJ45	
AVY16-ES	EtherSound	16in 16out	RJ45	By AuviTran
MY16-MD64	MADI	16in 16out	BNC, SC fiber	By Audio Service



MY8-AD96
8-Channel Analog Input Card

MY8-DA96
8-Channel Analog Output Card

MY8-ADDA96
8-Channel Analog Input/Output Card

MY16-AE
16-Channel AES/EBU format I/O

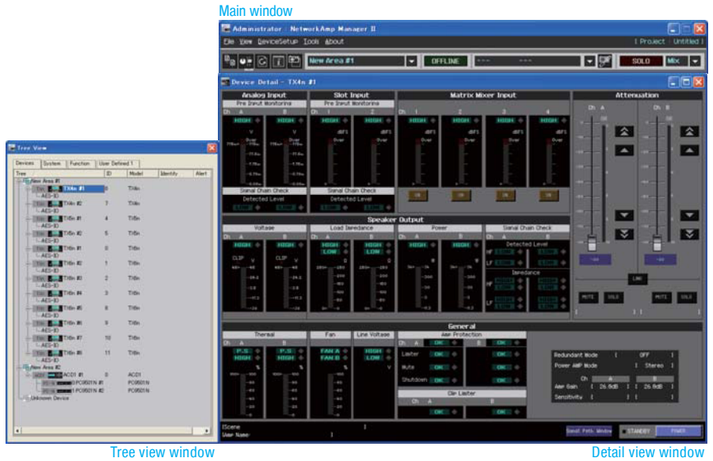
MY16-CII
16-Channel Audio CobraNet format I/O and Control I/O

MY16-ES64
16-Channel EtherSound format I/O and Control I/O

Amp Editor for Comprehensive Central Control

Amp Editor is a software application that lets you monitor, manage, and control all TXn amplifier functions and DSP parameters. If you will be combining TXn series amplifiers with Yamaha Tn, PC-1N, XP, XM and/or XH series amplifiers, the available functions of those amplifiers can be accessed as well if they are connected to the network via a Yamaha ACD1 Amplifier Controller Device.

The Amp Editor software runs on Windows based computers. No special drivers are required: simply connect your computer's Ethernet port to a standard high-speed Ethernet hub, and then the hub ports can be directly connected to the TXn amplifiers to be controlled/monitored. Once set up you can use the software's efficient, intuitive graphical interface to remotely monitor and control each device on the network.



In addition to comprehensive control and monitoring capability, the Amp Editor software also provides a number of features that make managing and controlling large multi-amp systems easy and efficient. You can name amps according to their function within your system, group amplifiers for simultaneous control, and name the groups for easy identification. For example, you might want to mute just the left FOH high-frequency stack, or solo just the right FOH low-frequency stack during a sound check. Amp Editor makes this type of control fast and easy.

There are also many advanced, flexible monitoring functions. Amp Editor can, for example, warn you when a parameter exceeds a pre-defined voltage, wattage, temperature, or impedance (upper/lower) value. This lets you keep track of all amplifiers in the system from a central computer display in real time. Warnings are automatically logged to an info file so it's easy to pinpoint and troubleshoot problems.

Status & Fault Monitoring

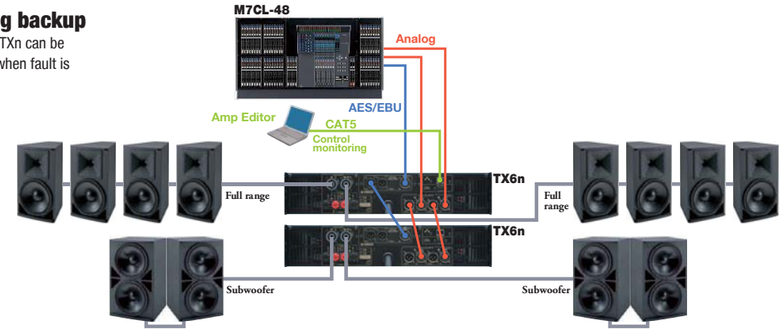
= Fault thresholds can be specified, and fault alerts provided via software and the rear-panel GPI outputs =

- **Power mains supply voltage (V)**
- **Signal Input Level (dBu)**
- **Load Impedance (ohms)**
- **Speaker Output Voltage and Power (W)**
- **Automatic Connection Diagnostics Using Pilot Tone**
- **Internal Temperature**
- **Fan Speed**
- **Alerts with Event Logging**

System Examples

Basic AES/EBU setup with analog backup

TXn amplifiers are fed digital signals via AES/EBU. TXn can be configured to automatically switch to analog input when fault is detected on the AES/EBU input.

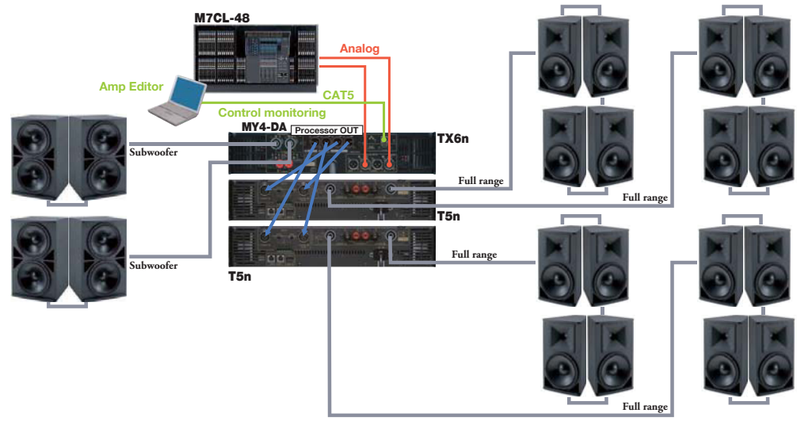


Analog setup using TXn and Tn amplifiers

This analog setup is supplied an analog source signal directly from the mixing console.

The TXn is driving subwoofers, with channels A and B driven in parallel mode. The Tn amplifiers are driving full range speakers, receiving processed signal from the TXn using the MY4-DA analog output card. This example is a mono setup, as all channels on the T5n amplifiers are receiving the same processed signal from the TXn.

Optional ACD1 unit is required for remote control and monitoring of the Tn amplifiers.



A digital PA system

Digital domain of your PA system is now expanded to keep signal digital right from the input(AD8HR), the mixing console, and to the amplifiers(TXn). The combination of AD8HR and NAI48ES may be used as a stagebox solution to send signals to the FOH mixing console via EtherSound. Mixed signals are sent back to the NAI48ES, and then on to the TXn amplifiers for processing and amplification.

Amp Editor software is used for status monitoring and control, connected to the amplifiers via standard Ethernet switches.